

Amendments to the Claims

Please cancel claims 4, 18, 19 and 24, and amended claims 1, 5, 23 and 25 as shown in the following list of claims. This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) An apparatus for controlling the position of a screen pointer, the apparatus comprising:

an at least partially coherent light source for illuminating an imaging surface, thereby generating reflected images; and

a navigation sensor for generating digital images based on the reflected images, performing a movement computation based on the digital images, generating movement data based on the movement computation that is indicative of relative motion between the imaging surface and the apparatus, wherein the movement computation has a low sensitivity to effects in the digital images caused by particle contamination,

wherein the digital images each include a set of active pixels and a set of spare pixels, and wherein the navigation sensor is configured to detect defective pixels in the digital images, wherein the movement computation comprises a correlation of the set of active pixels from the digital images, and wherein defective pixels in the digital images are not included in the correlation.

2. (original) The apparatus of claim 1, wherein the light source is a laser light source.

3. (canceled).

4. (canceled).

5. (currently amended) The apparatus of claim 1, wherein the navigation sensor is configured to cause a spare pixel to become an active pixel when the navigation sensor detects a defective pixel.

1 6. (original) The apparatus of claim 5, wherein the navigation sensor is
2 configured to cause a pixel to be deactivated if the navigation sensor detects that
3 the pixel is defective.

1 7. (canceled).

1 8. (canceled).

1 9. (canceled).

1 10. (canceled).

1 11. (canceled).

1 12. (canceled).

1 13. (canceled).

1 14. (canceled).

1 15. (canceled).

1 16. (canceled).

1 17. (canceled).

1 18. (canceled).

1 19. (canceled).

1 20. (canceled).

1 21. (previously presented) An apparatus for controlling the position of a screen
2 pointer, the apparatus comprising:

3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,

11 wherein the navigation sensor is configured to detect defective pixels in
12 the digital images, and identify a sub-array of pixels within the digital images that
13 do not include any defective pixels.

1 22. (previously presented) The apparatus of claim 21, wherein the movement
2 computation comprises a correlation of the sub-array of pixels from the digital
3 images, and wherein pixels outside the sub-array in the digital images are not
4 included in the correlation.

1 23. (currently amended) An apparatus for controlling the position of a screen
2 pointer, the apparatus comprising:

3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,

11 wherein the movement computation comprises a correlation of temporal
12 differences in a set of the digital images, wherein the set of the digital images
13 includes four consecutive digital images, and wherein the movement computation
14 comprises subtracting a first set of two of the four digital images to generate a first

15 difference image, subtracting a second set of two of the four digital images to
16 generate a second difference image, and correlating the first difference image with
17 the second difference image.

1 24. (canceled).

1 25. (currently amended) An apparatus for controlling the position of a screen
2 pointer, the apparatus comprising:
3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,
11 wherein the movement computation comprises summing only pixels
12 values from a first one of the digital images, thereby generating a first plurality of
13 sums, and summing only pixel values from a second one of the digital images,
14 thereby generating a second plurality of sums.

1 26. (previously presented) The apparatus of claim 25, wherein the movement
2 computation further comprises correlating the first plurality of sums with the
3 second plurality of sums.

1 27. (previously presented) The apparatus of claim 25, wherein the digital
2 images each include a plurality of rows of pixels and a plurality of columns of
3 pixels, and wherein the movement computation comprises summing pixel values
4 in each row of the digital images, thereby generating a plurality of row sums for
5 each digital image, and summing pixel values in each column of the digital
6 images, thereby generating a plurality of column sums for each digital image.

1 28. (previously presented) The apparatus of claim 25, wherein the movement
2 computation further comprises correlating the plurality of row sums from the first
3 one of the digital images with the plurality of row sums from the second one of
4 the digital images, and correlating the plurality of column sums from the first one
5 of the digital images with the plurality of column sums from the second one of the
6 digital images.

1 29. (previously presented) An apparatus for controlling the position of a screen
2 pointer, the apparatus comprising:
3 an at least partially coherent light source for illuminating an imaging
4 surface, thereby generating reflected images; and
5 a navigation sensor for generating digital images based on the reflected
6 images, performing a movement computation based on the digital images,
7 generating movement data based on the movement computation that is indicative
8 of relative motion between the imaging surface and the apparatus, wherein the
9 movement computation has a low sensitivity to effects in the digital images
10 caused by particle contamination,
11 wherein the movement computation comprises correlating the digital
12 images, thereby generating at least one correlation peak, and wherein the
13 navigation sensor is configured to determine if the correlation produces a false
14 correlation peak corresponding to zero displacement caused by defective pixels.

1 30. (previously presented) The apparatus of claim 29, wherein the navigation
2 sensor is configured to determine if the correlation produces a false correlation
3 peak by monitoring a set of pixels in the digital images and determining whether
4 pixel values from the set of pixels are changing by a threshold amount.

1 31. (previously presented) The apparatus of claim 29, wherein the navigation
2 sensor is configured to determine if the correlation produces a false correlation
3 peak by determining if the correlation produces a secondary peak corresponding
4 to a non-zero displacement with a peak magnitude that is greater than a threshold
5 value.